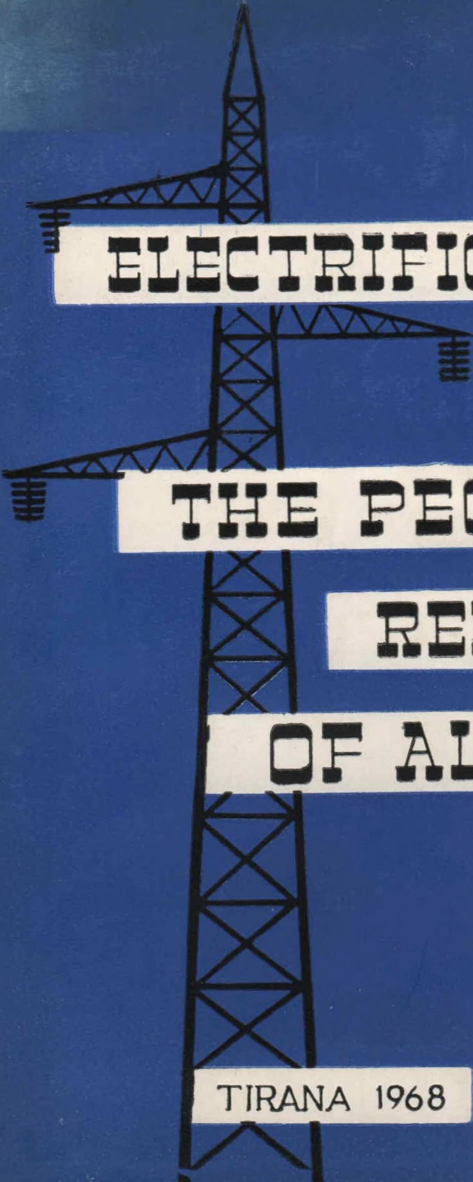

ELECTRIFICATION IN THE PEOPLE'S REPUBLIC OF ALBANIA

TIRANA 1968

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IN THE PEOPLE'S REPUBLIC OF ALBANIA

THE «NAIM FRASHËRI» PUBLISHING HOUSE
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THE DEVELOPMENT OF POWER INDUSTRY IN THE PEOPLE'S REPUBLIC OF ALBANIA

Some twenty-five years ago Albania was one of the most backward countries of Europe. Its backwardness was due to the age-long Turkish domination which had lasted nearly five centuries without interruption — up to 1912. But even after having won its independence, Albania remained a backward country for a long time. The fifteen years of King Zog's antipopular regime (1924-1939) kept Albania in the darkness of ignorance.

In the XIX century, when electric power began to spread in the other countries of Europe, in Albania its very name was ignored, our people had no notion of such power so conducive to the general progress and advancement of the human race. Even later, when the first Diesel electric stations of very small capacity were actually established in the principal towns of our country (1927), only the well-to-do families had the privilege of enjoying their benefits. At the time of our liberation, there was not a single electrified village in the whole country. On the other part, even the population of the towns could not afford to be linked to the power distribution network because of the high price of electric installations and electric current itself.

Under King Zog's feudal regime which pursued an antipopular policy, people did not even dream of the possibility of establishing a modern electrified industry. Thus, almost the whole capacity of the power stations of these times went to municipal services. And it could not be otherwise. Not only industry, in the proper sense of the word, did not exist altogether, but even its setting up seemed much like a chimera. The existence of a number of small workshops and factories, very primitive ones to boot, could not stimulate the development of electric power. Albania's deplorable retardation in the economic field was bound to be reflected in the absence of a power industry too. The town-dwellers, for their most part, had to be satisfied with poor candle light, and the petrol lamp itself was the privilege of the rich and of employees. In the countryside, the bleak houses of our country-folk were illuminated only by the flame of wood fire burning in the middle of the unceilinged room. There was no chimney to let the smoke out. The «August King», the criminal that fed on the blood of the people, offered to his subjects nothing but darkness.

The first power station established in Tirana (the one of the SITA company) had an installed capacity of 770 kW and achieved an annual production of 120,000 kWh. In 1938, the country as a whole (including the Vithkuq hydro-power plant near Korça) numbered all in all 12 power stations with a total installed capacity of 3,391 kW and an annual production of 9,315,000 kWh. Besides, to meet the particular needs of the existing «industry», there were functioning some small Diesel power stations with quite a negligeable installed capacity.

At that time, no one could speak of planning the power production and still less of its prospects of development. As is shown in the table 4, reproduced from the book «Albania in 1937, 25 years of self-government», Vol. 2, the management of power industry was totally in the privately owned hands of foreign shareholders' companies, such as SITA, SESA, STAMLES, etc. Taking advantage of the ignorance of the administrative apparatus of those times, these companies helped themselves to fabuluous profits at the people's costs. Later on, these shareholders' companies were joined by new partners, men of big fortune and wealth, traders and landowners, like the Verlacis, the Toptanis and other feudal lords.

The distribution of the installed power of the Diesel electric stations to the different towns in 1938 is represented in table 1 and their distribution in the towns in the graph 1.

As is shown in this table, the city of Tirana had three Diesel power stations, belonging to SITA, SESA and ITIS companies respectively, with an installed capacity of 1,220 kW in all, each of them supplying a different city quarter with power. Beyond those in Tirana, the SESA shareholders' company ran five other power stations in the various towns of the country. Their total capacity was as much as 1,990 kW.

The power production indices per inhabitant go also to show the very low level of electric reticulation of our country before liberation. In 1938, its production did not exceed 8,9 kWh per inhabitant. This index was 1.2 times lower than that of Turkey, 4,5 times lower than that of Greece, 8,9 times lower than that of Yugoslavia and 17 times lower than that of Hungary.

The power distribution network was in a lamentable state and there could be no question of the quality of the power supply. The «Java» magazine, which was published in Tirana, wrote in one of its 1937 June issues:

«Elbasan has got a power station. And nevertheless the city is not illuminated as it should be... The small 25 candle bulbs are hung so far apart that one can hardly see two of them at a time. And then these dim lights are lit only after eight o'clock in the evening, that is to say, when the citizens are fast asleep and need no light to shine over their heads».

We just cited this only to show the low level of power industry before liberation. This was closely linked with the poor development of our industry in general, power industry being an indispensable condition for a machine-based modern industry to work. Evoking this state, Comrade Enver Hoxha has said that «...there could be no question of it during the dark times of Zog's regime».

Industry and building construction taken together represented but 4,5 percent of the whole national income in 1938. The technical level of our industry before liberation was a very low one. About two-fifths of this industry had hardly reached the stage of simple cooperation and manufacture and relied chiefly on manual labor.

Such a situation of the industry as a whole could not stimulate the development of the power industry.

In 1938, the average installed capacity per power-station was about 300 kW. The equipment of these power stations was in a bad shape and, under proper technical conditions, would have been long since out of use. It was but natural that the work done by some rare power stations could not be efficient; as a result the price of electric power was very high.

ELECTRIC POWER STATIONS AND THEIR INSTALLED CAPACITY IN 1938

(reproduced from the book «Albania in 1937, 25 years of self-government» vol. 2)

Table No 1

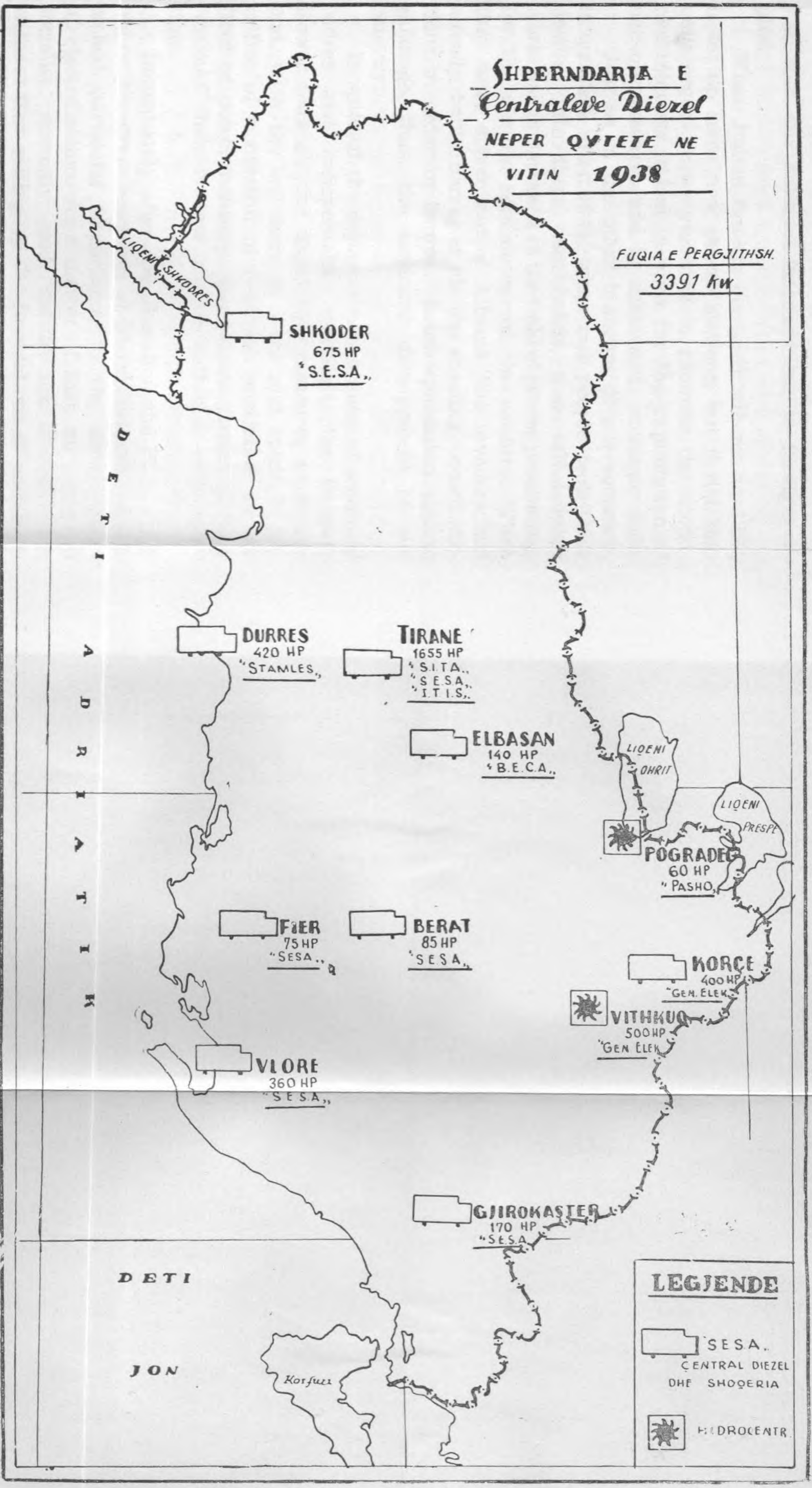
Towns	Capacity in kW	Managing shareholders' company
1. Tirana	1155	SITA
	440	SESA
	60	ITIS
2. Shkodra	675	SESA
3. Vlora	360	SESA

Towns	Capacity in kW	Managing shareholders' company
4. Gjirokastra	170	SESA
5. Berat	85	SESA
6. Fier	75	SESA
7. Korçë	400	Electric Power station
Vithkuq	500	Hydro-power station
8. Elbasan	140	BECA
9. Durrës	420	STAMLES
10. Pogradec	60	Pasho
11. Small power stations meeting individual needs		
Total	4600	
equivalent to 3391 kW		

At the same time, if we compare the wages earned by a worker at those times with the selling price of a kWh, we shall see that a worker, even by giving out his whole salary, could not have succeeded in paying for the electric power he consumes now.

At the small and rare power stations of those times the technical and administrative management was totally in the hands of the owners and of the foreign technicians and engineers. The Albanian workers were almost absent and if there was any of them, he did only unqualified work. This state of things was a direct consequence of the policy conducted by the King Zog's antipopular regime which

Map 1



Distribution of the Diesel power stations according to towns in 1938.
Total capacity 3391 kW
Legend: Diesel stations and Companies — Hydro-power Station.

had sold our national interests out to foreign capital.

When Italian fascism occupied Albania in 1939, it set up some new power stations, but it did that only urged by its yearning to promote the economic interests it had in view for the exploitation of our oil resources and to achieve its strategic ends.

Just as in the other branches of our economy, it was but after 1944, when our people took their destiny into their own hands, that self-denying work was undertaken in the field of power production, for the electric reticulation of the country. When they were driven out of Albania, the invaders had already badly damaged all the existing power stations in order to hamper their exploitation and to sabotage, thus, the economic development of our country.

In spite of the deplorable scantiness of technical cadres and indispensable materials, the People's Power took all the immediate measures necessary and, with the self-denying work and spirit of sacrifice of a handful of Albanian specialists in the field of power industry, the electric power stations resumed their normal service within a very short time.

Immediately after the liberation the PLA, relying on the great teachings of Marxism-Leninism, attached particular importance to the development of electrification. As a matter of fact, an advanced socialist economy and culture are inconceivable without first setting up the foundations of socialism.

In order to establish the new socialist industry, to uplift the political and cultural level of the masses, we had to build new power stations and train specialized cadres. It is precisely on this basis that the Party and People's Power mapped out the construction of power stations in complete harmony with the all-out development of the other branches of economy and culture.

In 1946 power production reached only 85 percent of that of 1938. This was due to the devastations of the war, the lack of spare parts for the general overhaul of machines and the lack of fuel.

The first and most important task which was posed at that time was the reconstruction of the power industry. And the latter was not only fully re-built on its ruins but as early as 1950 it succeeded in surpassing twice the 1938 production level.

But, no doubt, the most important stages in the fulfilment of the program of the Party for the electric reticulation of the country were the five-year plans for the development of our national economy.

Until 1950 the main efforts aimed at expanding the capacity of the existing Diesel power stations and at building up a series of new Diesel power stations, the extension of the power distribution network, the improving of the power installations for domestic and industrial use, the training of a considerable number of low, middle and upper technical cadres capable of coping with the problems of the exploitation of power equipment, the distribution of electric power and its use.

As a result of the further advancement of the various branches of our national economy, it turned out that it was impossible to meet the needs of consumers with small Diesel power stations. Our experience at those times as well as international experience in general taught us that the national industry of a given country could not rely on Diesel power stations alone, because the latter consume valuable fuels, call for expensive maintenance, need numerous spare parts and present other exigencies which render their use unpayable. Without excluding the utilisation of the Diesel power stations altogether, it was quite evident that the construction of powerful hydro-and thermo-power stations would present an indisputable advantage over the Diesel power stations. The building of hydro-power stations was, first of all, of great importance in the particular conditions of our country, the hydropower resources of the latter being reckoned at billions of kilowatt-hours and the Drin river, our main power source, providing half of this figure. In spite of the initial high investments called for by the construction of hydropower stations, these present numerous advantages, such as very low maintenance costs, reduced consumption of raw materials, easy maintenance and exploitation, a restricted number of personnel, short term of amortization, constant stability of equipment, reduced needs for spare parts, overhauling and so one and so forth. The advantages of the hydropower stations become still more evident, as their waters can be utilized for supplying the population with water, as is the case with the «V.I. Lenin» hydro-power station. Thus, in 1950 there was completed the construction of the first important hydro-power scheme at Selita. This hydro-power station which is named after V.I. Lenin has an installed capacity of 5,000 kW. The building of this hydro-power station has made the establishment of new industries in the Tirana region possible, ensuring the uninterrupted supply of the capital with electric power and drinking water at the same time.

Alongside with the construction of the V.I. Lenin hydropower plant, work began in 1950 for the construction of two new thermo-power stations, the one in Tirana and the other in Stalin-City. In principle, the construction of thermo-power stations is indispensable to completely meet the needs in electric power, especially during the periods when the waters of the hydro-power stations lie at a low ebb, as is the case in time of droughts, when rainwater is scarce. But this advantage is not to be found there only. Powerful thermo-power stations present, among other things, the advantage of consuming low yield fuels and require smaller investments than hydro-power stations. This is the more so, when there exists a demand to utilize their steam on the part of industry. In this respect the advantages of the thermo-power stations in comparison with the hydro-power stations are indisputable.

In 1951, the first thermo-power station with an installed capacity of 5.000 kW was commissioned in Tirana. This thermo-power station is fed by the steam used by the Stalin Textile Mills for their proper technological needs. The Tirana thermo-power station was linked by a parallel 35 kilovolt connecting line to the Lenin Hydro-power station, thus creating the first regional power system in our country. The setting up of this regional power system created the necessary conditions for a further development of the industry and other economic branches of our capital.

In 1951, the Maliq thermo-power station was commissioned initially with a capacity of 3.000 kW and, later on, of 7.000 kW, thus rendering it possible for the sugar refinery to be put into operation.

In 1952, in order to meet the ever increasing demands of the Stalin City-Patos industrial region, there was set up a thermo-power station in the Stalin City, initially with a capacity of 2,000 kW and, later on, of 5.600 kW, which functioned parallel with the Diesel power station of the Stalin City and Patos by means of a 35 kV line, creating, thus, the second regional power system in our country. In order to establish a sufficient power supply for the Stalin City-Patos zone, the oil industry has undergone a further expansion ensuring an increase of fuel production.

In 1953 there was built a thermo-power station with a capacity of 3,000 kW in Vlora at the same time with the commission of the Cement Plant.

In 1954, there was completed the construction of the Cerrik thermo-power station with an installed capacity of 8,500 kW. This station supplies with electric power the Cërrik-Elbasan sector and has made the exploitation of the Cërrik Oil Processing Plant possible.

In 1954, the construction of a hydro-power station with an installed capacity of 25,000 kW was begun on the Mati river this being one of the most important economic schemes undertaken so far in our country. As the work for the construction of this hydro-power station (later named the «Karl Marx» hydro-power Station) was nearing its completion, there was being established in our country a solid power basis capable of meeting the demands of the other vital sectors of economy and culture for electric power. In this way, with the parallel connection of the Lenin hydro-power station, the Tirana thermo-power station, the Cerrik thermo-power station, the Stalin City thermo-power station and the Vlora thermo-power station, all of them taken together with a total installed capacity of about 50,000 kW, there were created the conditions for establishing a single power system for the Republic as a whole. The Maliq thermo-power station, due to its geographical position, had to remain out of this system for the time being.

The parallel connection of the hydro and

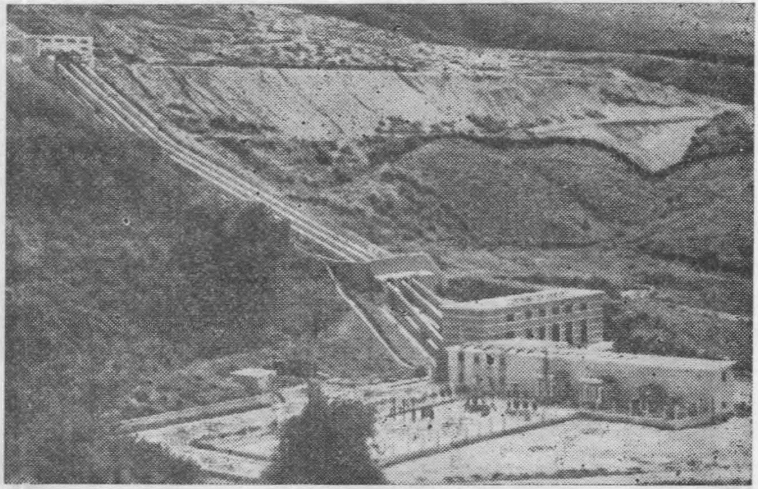


Fig. 1 — View of the «J. V. Stalin» hydro-power station

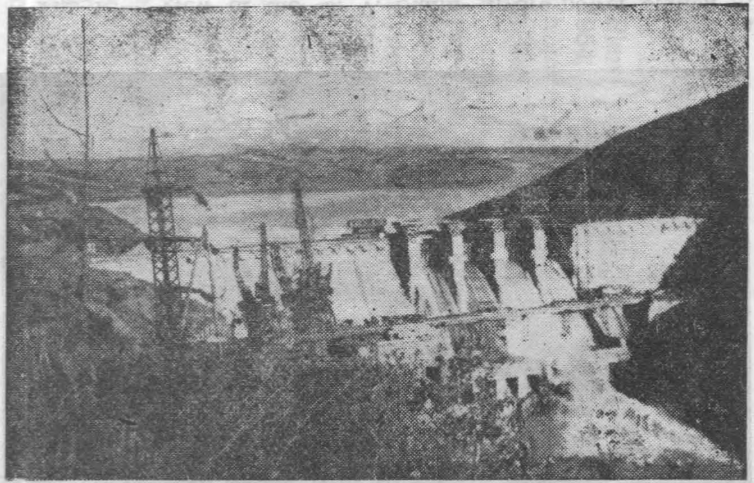


Fig. 2 — View of the «Karl Marx» hydro-power station

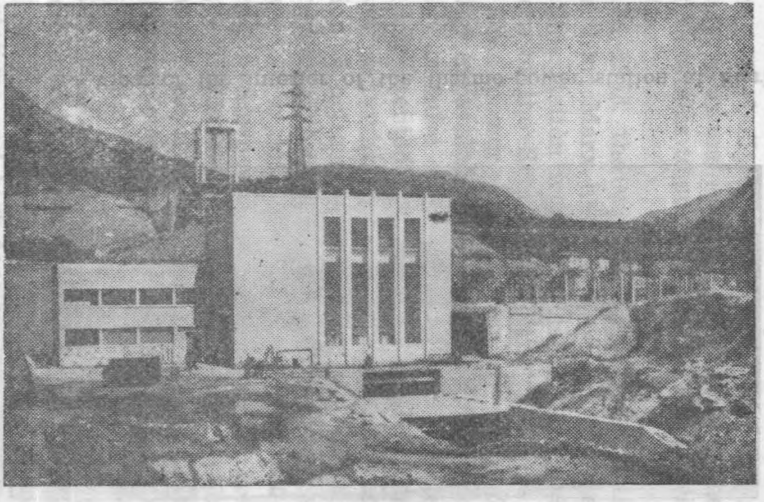


Fig. 3 — View of the Bistrica II hydro-power station at Fieri.

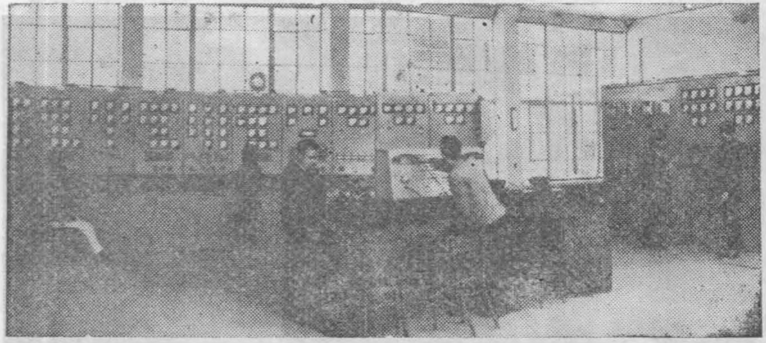


Fig. 4 — View of the interior of the thermo-power station at Fieri

thermo-power stations was achieved with the construction of high tension lines of 110 kV which were set up for the first time in our country. At the same time, with the setting up of these 110 kV lines, there was built a series of powerful sub-stations that serve as main connecting knots for the different power-stations to supply the consumers with electric power.

In 1958, the work for the construction of the great Karl Marx hydro-power station was completed. This station was attached to the general power system of the Republic.

This power system, created in 1957, and its further expansion were of greatest importance, principally because of the economic advantage this system represented. In this field, there could be no comparison with the past. Until 1957 each power station functioned separately and supplied with energy as many consumers as its technical capacity allowed it to do. With the commission of the «Karl Marx» hydro-power station with an installed capacity of 25,000 kW and the setting up of a whole series of electric sub-stations and high tension lines, in our country there were laid the foundations for the establishment of a general power system making a wide electrification of industry, mines, agriculture. building construction and the countryside possible. The work of all the power-stations, sub-stations and high-tension transmission lines, coordinated in a general power system, ensures the uninterrupted supply of the different consumers, a supply that is always more stable than that of different separately working power-stations.

Later on, in 1963, this system was to include the second hydro-power station on the Mati river. This station named after Friedrich Engels has an installed capacity of 24,000 kW. In 1965 this system included also the hydro- power station on the Bistrica river — the «Stalin» hydro-power plant with an installed capacity of 22,000 kW — and a second hydro-power station on the same river — the «Bistrica II» with an installed capacity of 5,000 kW. In this way, the total capacity of the power system had about reached the 110,000 kW mark.

Until 1966 the over-all capacity of the general power production system of the Republic was entirely sufficient to meet the consumers' demands of this period.

During the construction of the hydro-power schemes, our workers and people's intelligentsia have worked with a high spirit of self-abnegation, they have not recoiled before any obstacles of nature but, showing unheard-of examples of heroism, have successfully accomplished the great tasks laid down before them by the Party. From the ranks of the workers working at the construction of these plants, there have emerged heroes of socialist labor and a good number of other excellent workers who, when the need has arisen have even laid down their lives for the common good. A great number of schemes which make up the general power system of the Republic have been projected and built by our workers themselves who have thus given the proper answer to the modern revisionists who imagined that the Albanians would be incapable of setting up such important plants without their help.

In spite of the ferocious blockade set up by the revisionists and imperialists, the Albanian people found sufficient resources and technical means to promote the ever greater development of the different branches of their national economy, in general, and of the power industry, in particular. The expansion rate of the power industry as well as of the other branches of our national economy during these recent years are the best confirmation of this. Thanks to the fraternal aid the Chinese people are rendering to our country, in Fier there has been built up the greatest thermo-power station in Albania with an installed capacity of 100,000 kW.

The commission of the Fier thermo-power station has made the construction of the Nitrate Fertilizer and other plants possible.

The construction of this great thermo-power station has consolidated the basis of our general power system. This system is still more vivified by the interconnection of the various plants, in other words, by the high-tension lines — the «electric arteries» of industrialized Albania — spreading their ramifications all over the country.

Today, one day's power production in Albania is equal to that of an entire trimester in 1938 and the installed capacity of the Albanian power-plants is 45 times larger than that of 1938. During the three five-year planed periods, the energy produced by the hydro-power stations, in proportion to the annual general power production, lies between 78 and 55 percent and the energy produced by the thermo-power plants lies between 22 and 45 percent.

What prospects are opened to our country in this field?

From now on to 1970, our general power system will be endowed with 110 kV power transmission lines which will be set up and run through Ulëz, Bulqiza, Durrës, Fier, Fushë-Krujë, Tiranë, etc. Our power system will fully provide for the rapid development of our national economy in general, for the creation and the strengthening of a certain number of new branches of our industry in particular, such as the chrome, fertilizers, mining, construction materials and other industries which require great amounts of electric power. Our power system will be able to cope with this important problem only if it succeeds in strengthening itself, in taking a great step ahead. This great leap will be the construction of the first giant plant on the Drin river, — the Vau i Dejës hydro-power station, of an installed capacity of 250,000 kW and an average annual power production of about 950,000,000 kWh. In order to give a clearer idea of it, we shall say only that its capacity will be equal to 10 hydro-power stations the size of that named after Karl Marx.

The tables below will give a still clearer idea of the development of the power industry in our country.

The increase of the capacity of the power stations
(1938 = 1)

Table No2

	1938	1945	1950	1955	1960	1965	1967	1970
Total capacity	1	1,5	2,9	10	21	34	47	65

The increase of the maximum load of electric power
(1938 = 1)

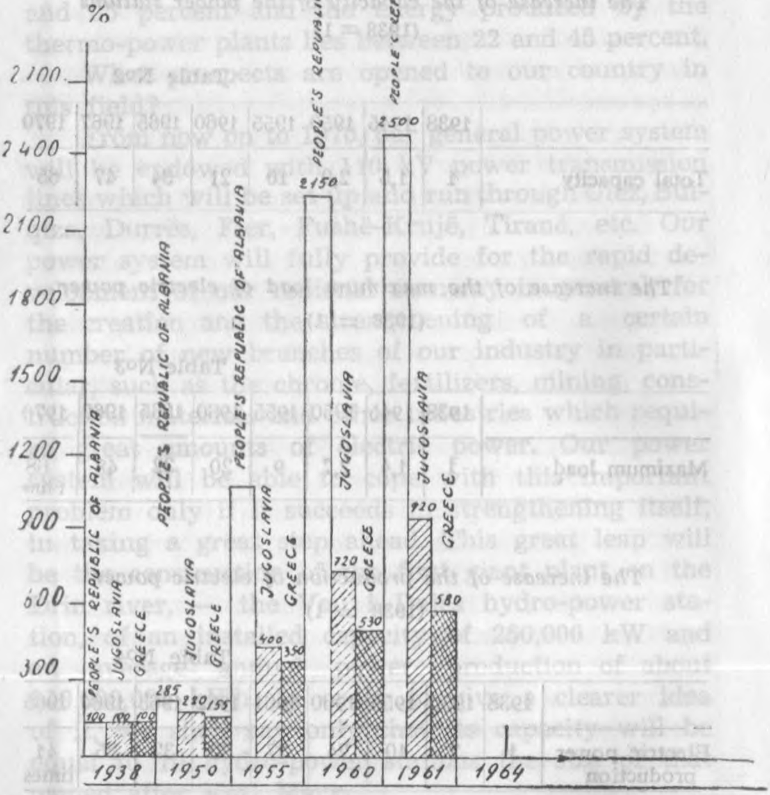
Table No3

	1938	1945	1950	1955	1960	1965	1967	1970
Maximum load	1	1,4	2,7	9	20	32	48	68 time

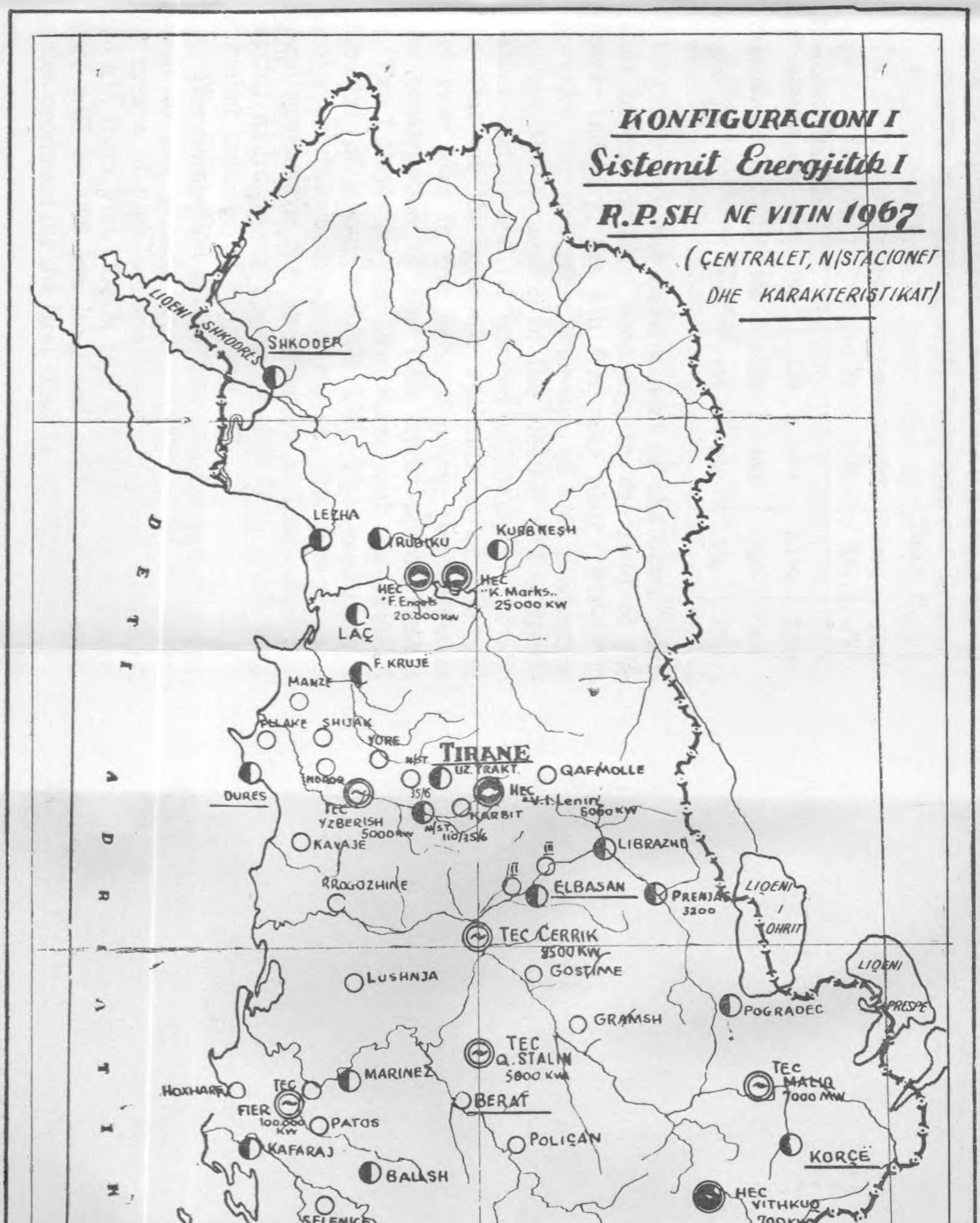
The increase of the production of electric power
(1938 = 1)

Table No4

	1938	1950	1955	1960	1961	1962	1963	1964	1965
Electric power production	1	2	10	24	27	30	32	35	41 times


%
2700
2400
2100
1800
1500
1200
900
600
300
PEOPLE'S REPUBLIC OF ALBANIA
JUGOSLAVIA
GREECE
100
100
100
PEOPLE'S REPUBLIC OF ALBANIA
JUGOSLAVIA
GREELE
285
220
155
PEOPLE'S REPUBLIC OF ALBANIA
JUGOSLAVIA
GREECE
400
350
PEOPLE'S REPUBLIC OF ALBANIA
JUGOSLAVIA
GREECE
2150
720
530
PEOPLE'S REPUBLIC OF ALBANIA
JUGOSLAVIA
GREECE
2500
920
580
1938
1950
1955
1960
1961
1964

Map 2



Power system of the People's Republic of Albania in 1967 (Stations, Sub-stations and their characteristics.

Legend: Hydro-power stations, Thermo-power stations, 110/35/6 kV sub-stations, 35/6 kV sub-stations.

The increase of the production of electric power in our country as compared with Yugoslavia and Greece

Table N. 5

	1938 %	1950 %	1955 %	1960 %	1961 %
People's Republic of Albania	100	235	950	2,150	2,500
Yugoslavia	100	220	400	720	920
Greece	100	155	350	530	580

Alongside with the development of the other branches of our national economy, in the field of the power industry, the 4th five-year plan (1966-1970) provides for a further increase of the productive sources, the expansion of the electric power distribution system and its broader utilisation.

One of the greatest realizations of the 4th five-year plan in the field of power production is the construction of the first hydro-power station at Vau i Dejës on the Drin river with an installed capacity of about 250.000 kW. The construction project of this hydro-power giant fits into the general project for the construction of four other powerful hydro-power plants on the Drin river with a global capacity of 1,300,000 kW.

The connection of the Vau i Dejës hydro-power plant to our general power system will be made by means of high tension lines and sub-stations of 220 kV, from Vau i Dejës to Fier. These high-power lines will be 220 km long and will be built with cables produced for the first time in our country.

In order to link up the Vau i Dejës and the other four hydro-power plants on the Drin river to the general power system of the Republic, there will be set up high tension transmission lines with a capacity of 220 kV made up of 22 kV ring interconnectors and powerful 220/110 kV substations.

With such power availabilities being put at the disposal of the different branches of our national economy, there will be commissioned major industrial plants the production of which will increase the economic potential of our country to a still higher level.

In order that our readers may have a clear idea of the power plants already built and those under construction in our country, we shall give here some of their main characteristics.

1) EXISTING POWER WORKS

a) *The Lenin hydro-power plant.* It is made up of two hydro-turbines of the Pelton type with a capacity of 2.500 kW each. The turbines function with a 1,000 lit/sec debit and a waterfall (prevalence) of 680 m. Besides electric power, this station supplies abundantly Tirana and Durrës with drinking water.

b) *The Tirana thermo-power station.* It possesses an installed capacity of 5,000 kW and is made up of two turbine generators of a capacity of 2,500 kW each.

c) *The Cërrik thermo-power station.* It possesses an installed capacity of 8,500 kW and is composed of three turbine generators of which two are of 3,500 kW and one of 1,500 kW capacity.

d) *The thermo-power station of the Stalin City.* It has an installed capacity of 5,600 kW and is made up of two turbinegenerators, one of 3,600 kW and the other of 2,000 kW capacities.

e) *The Vlora thermo-power station.* It has an installed capacity of 3,000 kW and is made up of two turbinegenerators functioning under a simple condensation regime with a capacity of 1500 kW each.

f) *The Maliq thermo-power station* It possesses an installed capacity of 7,000 kW and is composed of two turbine-generators functioning under a steam recuperation regime with a capacity of 1,500 kW each and of a turbinegenerator with a steam condensation regime with a capacity of 4,000 kW.

g) *The Bistrica «J. V. Stalin» hydro-power station.* It possesses an installed capacity of 22,000 kW and is made up of three hydro-power generators of the Francis type.

h) *The Bistrica II hydro-power station.* It possesses a capacity of 5,000 kW and is made up of one hydro-turbine of the Kaplan type. Its waterfall is $H = 20$ m and its water debit $Q = 28$ m^3/sec.

i) *The «Karl Marx» hydro-power station on the Mati river at Ulëz.* It has an installed capacity of 25,000 kW and is made up of four hydrogenerators with a capacity of 6,250 kW each. The hydro-turbines are of the Francis type.

i) *«The Fredrich Engels» hydro-power station on the Mati River at Shkopet.* It has an installed capacity of 24,000 kW and is made up of two hydro-generators with a capacity of 12,000 kW each. The turbines are of the Kaplan type.

k) *The Fier thermo-power station.* It is the most powerful electric power station in our country.

The machines installed at this thermo-power station are of the most modern type, their yield is very high. This thermo-power station is equipped with automatic regulating apparatuses of the most up-to-date pattern. The ensemble of the installations of this electric power station is impressive indeed.

l) *Power transmission lines.* A broad network of power transmission lines is spread all over our country. They link the various power stations with the general power system of the Republic and the power consumers with the power sub-stations and transformation grids. The 110 kV and 35 kV high-tension lines of our power distribution network reach to the farthest corners of our Homeland.

At the same time there are functioning about 70 power sub-stations and hundreds of overhead cable lines with a tension of 6 to 10 kV. They distribute and supply with electric power the different enterprises of industry, mining, agriculture, construction building, communications, as well as townships and villages from the northernmost to the southernmost tip of our Fatherland.

m) The electric sub-stations and transformation grids. Through the main 110 and 35 kV transmission lines there are linked numerous sub-stations which serve as power connecting and distributing grids. According to the required tensions, our electric power system possesses 110/35/6 kV, 110/6 kV, 35/6 kV and other sub-stations. The total capacity of these sub-stations is much superior to that of the electric power stations of our general power system taken together, thus allowing for an indispensable reserve to cope with the ever increasing demands for power capacities in the future.

Besides the electric power-works already mentioned, our country possesses a lot of others, such as the Diesel power stations installed in the different townships, mines and villages as well as a number of small local hydro-power stations in the countryside.

2. FUTURE POWER WORKS

a) *The hydro-power station on the Drin river at Vau i Dejës.*

In order to exploit the power resources of the Drin river as much as possible, there is being built at present the greatest hydro-power station of our country with a capacity of about 250,000 kW.

In the Middle Ages, not far from Vau i Dejës there rose the ancient city of Dagna, a fief of the Zaharia feudals. The Dagna fortress became famous during the Scanderbeg wars. In proximity to the ruins of the ancient fortress, there is rising now in all its greatness the giant of our power industry — the Vau i Dejës hydro-power plant. The construction of this station is the first step taken in setting up a series of big hydro-power stations in our country.

At present the Drin river is the main object of the studies by our hydrologists. Before the liberation foreign specialists had also attempted to study the regime of this river with a view to its exploitation. Before 1939, a German expedition tried unsuccessfully to drift down the Drin waterway. These last two years, the Hydrometeorological Institute has organized two complex expeditions on the Drin river. That of the year 1967 has given particularly excellent results, in spite of the great difficulties met especially in the most dangerous section of the river, on a spot where there are many waterfalls and where a member of the German team had met his death. In not a very distant past, the Drin river just as the most of our torrential rivers was a source of calamities.

The highwaters of the Drin and Buna caused frequent and disastruous floods. As recently as 1963, the Drin river flooded a surface of about 18,000 ha and its waters remained more than twenty days there to the great damage of the Zadrima, Bërdica and Trushi plains.

But at present, thanks mainly to the protection measures taken after 1963, the flooding danger during highwaters has been considerably reduced. Later on, with the construction of the Vau i Dejës hydro-power and other plants, the Drin course will be completely harnessed and subjugated to the will of our working people.

The Drin river, just as the other water courses of Albania, is a formation of recent geological times; one can even say of it that is «young» and impetuous. On the other part, these characteristics are very favorable for the power it may supply, and we are going to illustrate this by means of an example.

The Volga river has a 3 cm per km inclination, whereas that of the Drin river is 70 times as high. Although the water debit of the Drin river is very inferior to that of the Volga, it can attain a per kilometer power almost equal to that of the huge Russian river.

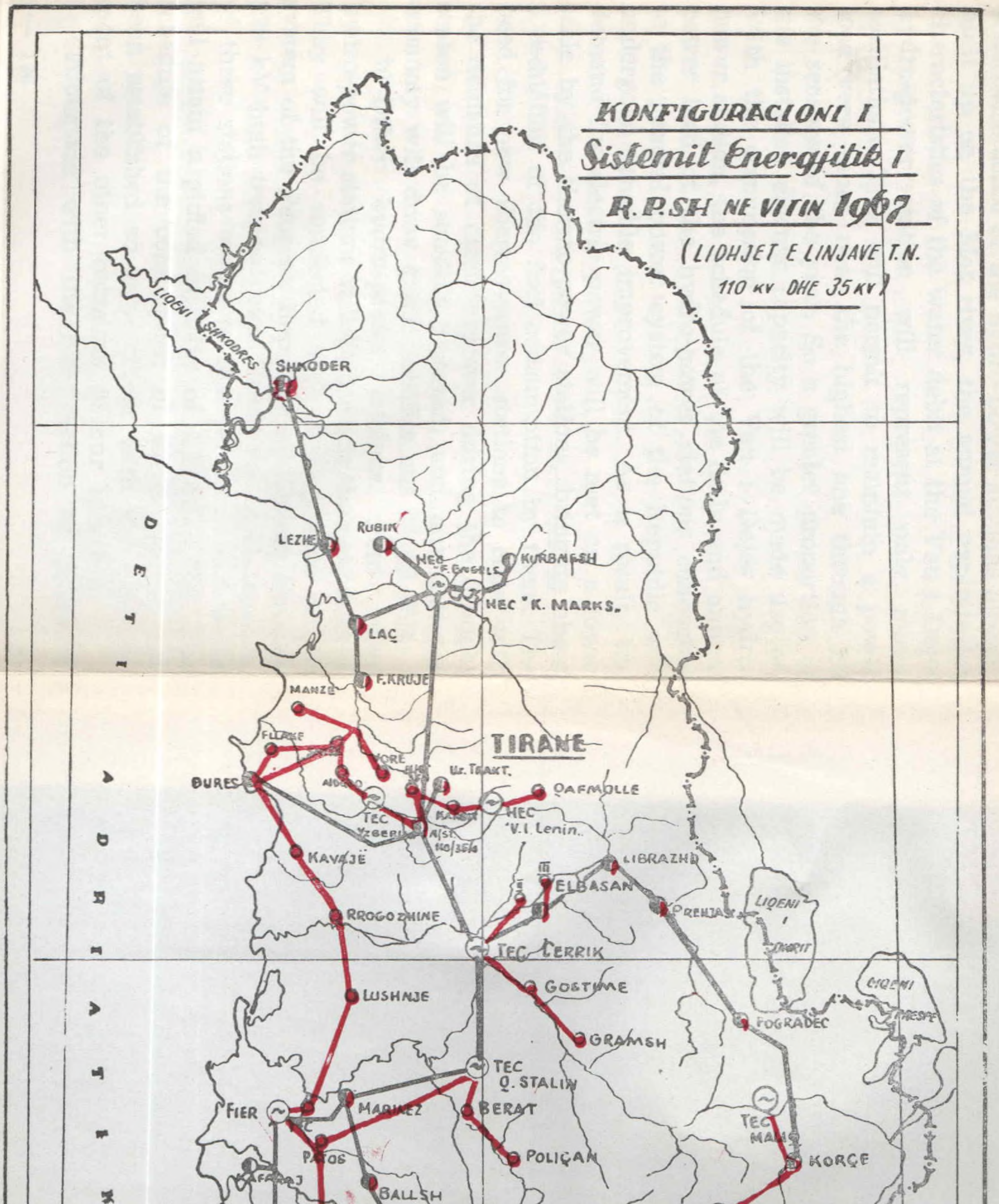
The Drin is the longest and the most water-rich river of Albania. It pours about 10,500,000,000 cubic meters of water annually down to the sea. For instance, in January 1963, the Drin river had a water debit of 5,180 cubic meters per second at Vau i Dejës. If collected into a reservoir, this water quantity would suffice to supply a city as big as Tirana with water during three fourths of the year.

The historic 5th Party Congress laid down the task of building the Vau i Dejës hydro-power station, which will be the greatest and the most important work of the 4th five-year plan. With its commission, the installed capacity of our power stations will double and our per inhabitant power consumption will attain levels comparable to those of the most advanced countries.

Our workers, imbued with the teachings of the Party and Comrade Enver Hoxha, have courageously set about this task and are busy preparing projects and ensuring their accomplishment within the shortest possible time. Carried along by the revolutionary impetus that has gripped our people as a whole, our workers of the construction and projecting sector have succeeded in accomplishing their preparatory work and constructing the principal buildings within record time. In order to have an idea of the grandiose proportions of this project of our 4th five-year plan, suffice it to recall that earthwork alone will include digging three million cubic meters of gravel, earth and rock and about 400,000 cubic meters of concrete will be laid. The project of this giant hydro-power station provides for the creation of a lake with a capacity of 600,000,000 cubic meters of water. The completion of this important scheme will help to protect the land against erosion and all sorts of damages caused by the Drin river up to now. The construction of this great hydro-power station is a difficult and complex task, but the workers' collective that have set about it under the leadership of the Party will be equal to the task and will courageously surmount all obstacles.

With the construction of this hydro-power station, brilliant prospects will be opened to the development of the power production, in particular, and to the national economy, in general. In compa-

Map 3



Power system of the People's Republic of Albania in 1967 110 kV and 35 kV hygh tension lines. **Legend:** 110 kV lines, 35 kV lines.

rison with those of the hydro-power stations already built up on the Mat river, the annual exploitation characteristics of the water debit at the Vau i Dejës hydro-power station will represent only minor oscillations. This will permit to maintain a power load very much near the highest one through all the seasons of the year. So a greater proportion of the installed electric capacity will be made use of. With the commission of the Vau i Dejës hydro-power station, the schedule of the daily and annual power load of the hydro-power stations connected to the general power system of the Republic will undergo a sensible improvement. As a result, the demand for electric power will be met on a lower scale by the thermo-power stations, bringing about a reduction of the fuel consumption by them. The need for new thermo-power stations to cope with the demands of electric power during the drought season will be sensibly reduced, and our national economy will draw great benefits out of all this.

b) *Other hydro-power stations.* Four other hydro-power stations will be built in the near future. They will be connected with the general power system of the People's Republic of Albania through 220 kV high tension lines. Thus, the total capacity of these stations added to that of the Vau i Dejës will attain a global capacity of 1,300,000 kW. The schedule of the commission of these stations has been established so as to fit in with the development of the other branches of our industry.

Alongside with the construction of powerful hydro-power stations, new thermo-power, Diesel and small local hydro-power stations for the electrification of the countryside will be built.

c) *The distribution of electric power.* Besides the increase of the power sources of our general power system, the further expansion of the power distribution system will assume particular importance during the fourth five-year period, this system having to supply with energy the new industrial consumers and a great part of the territory that has not yet been electrified. Our power distribution system includes high tension transmission lines of 6, 10 and 35 kV; high tension transmission lines of 110 and 220 kV, etc; low tension transmission lines of 380 and 220 V, etc; transformator substations of 22/110, 110/35/6, 110/6, 35/0,4 and 35/10 kV, etc.; transformator grids of 6/0,4 and 10/0,4 kV, etc. The map of the general distribution system of our country will change its face, electric arteries will spread to the four corners of our country and supply all the consumers with ample electric power. The projects and study of the power distribution network are based on solid technical and economic foundations, several variants have been studied and there have been chosen the ones which provide for the greatest advantages from the technical point of view with minor initial investment costs and reduced distribution losses.

In the future, the power distribution will be extended also to regions which will not be connected to the general power distribution system of the Republic, that is to say to the regions that will be supplied by small local power stations.

The commission of a 220 kV high-tension line for the first time in our country will raise the technical level of the exploitation of the equipment to the degree called for by this tension.

The electric equipment for the production and distribution of electric power, such as stations, substations, transmission lines, — all of them have been chosen on the basis of an accurate study of the needs of the new consumers of electric power and the prospects of their rise in the future, on the basis of the geographical distribution of the existing and projected power stations, of the power load centers for the consumers' supply, of the direction of the power flow in normal and abnormal regimes (in cases of breakdown of one or several power stations, etc.), of keeping the tensions within tolerable limits in various points of the system, as well as on the basis of other technical and economic factors.

In this way, the electric power production and distribution equipment in and out of the framework of our general power distribution system will completely meet the ever increasing demands of all the power consumers as to quantity and quality, will further stimulate the all-round development of our economy, so that the power capacities may never be deficient or exceeding in function of these demands.

THE IMPORTANCE OF THE DECISION OF THE 4th PLENARY MEETING OF THE CENTRAL COMMITTEE OF THE PLA «ON COMPLETING THE ELECTRIFICATION OF ALL THE RURAL AREAS OF OUR COUNTRY BY NOVEMBER 8th 1971» AT THE CELEBRATION OF THE 30th ANNIVERSARY OF THE FOUNDING OF THE PARTY

The decision of the Fourth Plenary Meeting of the Central Committee of the Party of Labor of Albania taken in 1967 on completing the electrification of all the rural areas of the country by the end of November 1971, at the celebration of the thirtieth anniversary of the founding of the Party of Labor of Albania, fourteen years ahead of schedule, represents a vast program of work for our march ahead along the road blazoned by the Fifth Party Congress towards the complete edification of the socialist society.

The construction of socialism in our country could not be conceived without the complete electrification of the country. The successful accomplishment of this process requires that we always keep in view the Marxist-Leninist principles of placing politics in command in all fields followed consistently by our party.

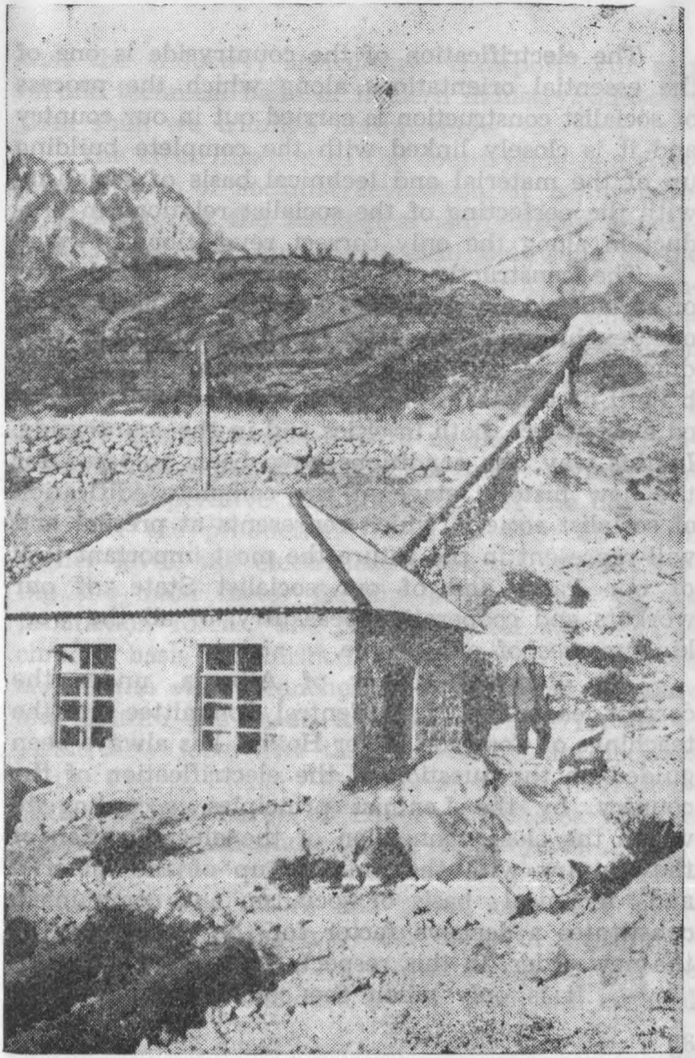


Fig. 6. View of a village hydro-power station

The electrification of the countryside is one of the essential orientations along which the process of socialist construction is carried out in our country and it is closely linked with the complete building up of the material and technical basis of socialism, with the perfecting of the socialist relations in production along the only correct revolutionary way.

The construction of the economic foundations of socialism having been accomplished, the tasks of our revolution in the field of the relations in production have continued to be carried out to the benefit of socialism. The socialist order has triumphed everywhere, both in cities and in the countryside. In this way, the conditions have been prepared for the new historic stage of the complete edification of socialist society, which represents at present and will represent in the future the most important task of our Party and of our socialist State, of our workers and cooperative peasantry, of all the working masses of our people.

The Party of Labor of Albania, under the correct leadership of its Central Committee and the teachings of Comrade Enver Hoxha, has always been guided, in the question of the electrification of the country, by the Leninist principles, according to which the close connection of the electrification of the country with the building up of the material and technical basis of socialism and communism constitutes a decisive factor for the realizations of the new order. In this respect, V. I. Lenin has said:

«. . .It is only when the country is electrified that the industry, agriculture, transport will rely on the technical basis of modern industry, and only then shall we triumph definitively».

The electrification of the countryside is a constituent part of socialist revolution, it is intimately linked with the ideological and cultural revolution, it develops and deepens in the wake of the latter. It has not begun today. It is a long time since the Party has taken up this problem, and, during the successive stages the socialist revolution has gone through in our country, important successes have been scored in this field too. There have already been established with us the socialist relations in production which not only permit, but make it imperative that the rythm of the development of the production forces be kept at a still higher level, the electrification of the country being the main factor for the advancement of the production forces. The solid material and the technical basis established in industry, agriculture and in the other branches of our national economy and culture has made it today possible for us to tackle new jobs, new tasks posed by the decision of the Fourth Plenary Meeting of the Central Committee of the Party of Labor of Albania on the complete electrification of our countryside.

Thus, after the agrarian reform, the collectivisation of agriculture and other successive measures consistenly taken by our party in a profoundly revolutionary spirit for the improvement and the lifting up of the standard of the social and cultural life of the countryside, the decision on the complete electrification of our countryside represents a truly grandiose revolution and a historic event of great importance for the whole Albanian people.

In 1971, electric light, the light of the Party will be lit throughout our socialist Homeland, and its irradiation will promote the further development and progress of our countryside.

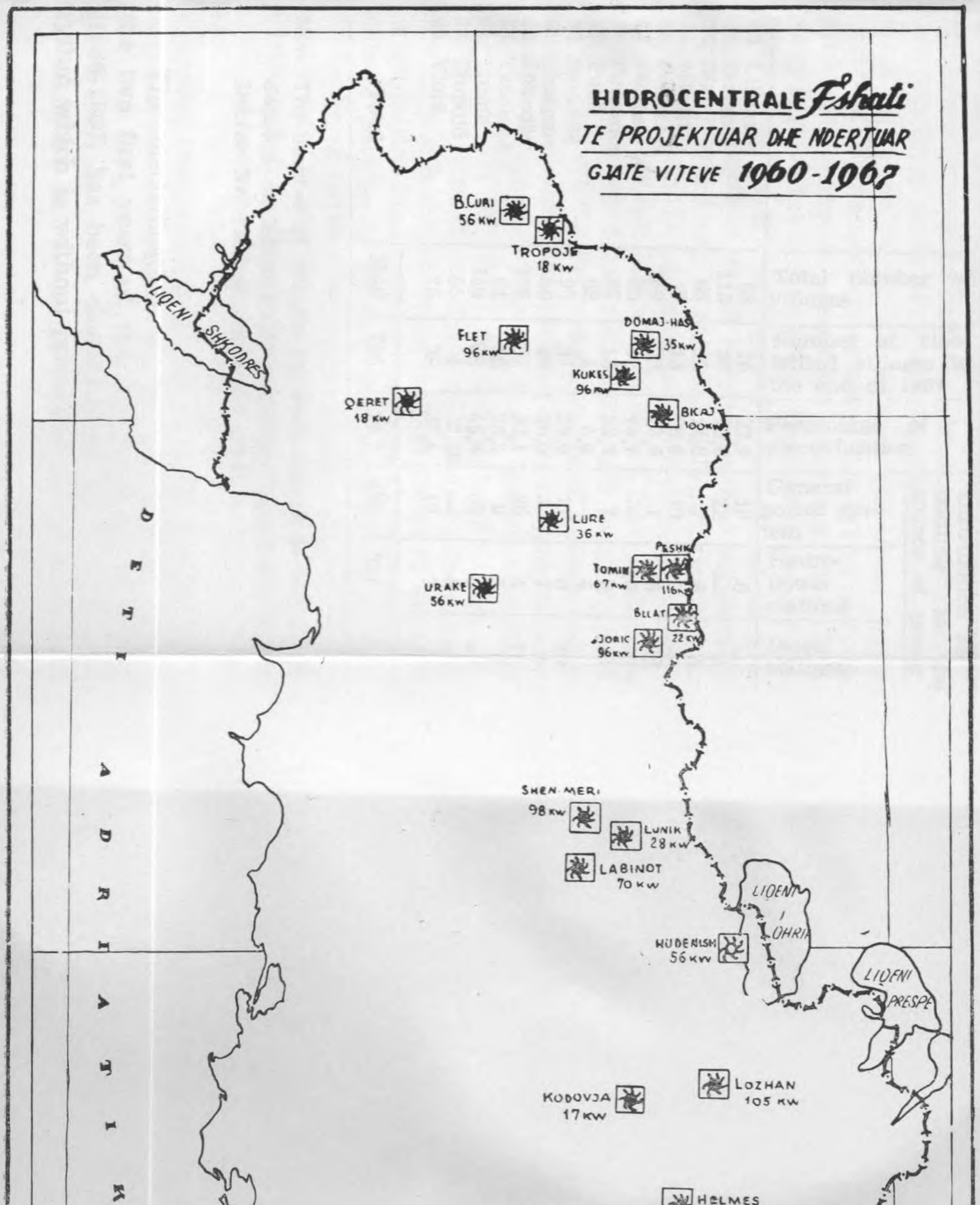
At the end of 1967, there were 756 electrified villages throughout our country, that is to say 29,7 percent of the total number of villages in our country.

NUMBER OF THE ELECTRIFIED VILLAGES TO THE END OF 1967

Table N° 6

District	Total number of villages	Number of electrified villages to the end of 1967	Percentage of electrification	Distribution according to the source of power		
				General power system	Hydro-power stations	Diesel stations
1. Berat	129	29	22,4	28	1	—
2. Durrës	110	56	50,8	51	—	5
3. Elbasan	176	46	26,2	43	3	—
4. Ersekë	70	28	40,0	4	24	—
5. Fier	137	45	32,8	44	—	1
6. Gramsh	72	10	13,9	5	5	—
7. Gjirokastër	81	48	59,0	11	32	5
8. Korçë	190	96	50,0	50	39	7
9. Krujë	61	20	32,8	14	—	6
10. Kukës	115	17	14,8	2	10	5
11. Lezhë	50	13	26,0	10	—	3

Map 4



Rural hydro-power stations projected and set up during the period from 1960 to 1967 — Legend: Hydro-power station.

District	Total number of villages	Number of electrified villages to the end of 1967	Percentage of electrification	Distribution according to the source of power		
				General power system	Hydro-power stations	Diesel stations
12. Librazhd	58	16	27,9	10	6	—
13. Lushnjë	115	26	22,6	22	—	4
14. Mat	61	15	24,6	7	6	2
15. Mirditë	49	13	26,6	10	3	—
16. Peshkopi	169	23	13,6	1	16	6
17. Përmet	85	12	14,1	—	10	2
18. Pogradec	57	13	22,8	7	3	3
19. Pukë	68	4	5,9	—	4	-
20. Sarandë	95	37	39,0	11	6	20
21. Skrapar	80	16	20,0	—	7	9
22. Shkodër	178	57	32,1	38	4	15
23. Tepelenë	61	16	26,3	9	5	2
24. Tiranë	149	68	45,6	62	6	—
25. Tropojë	55	4	7,26	—	4	—
26. Vlorë	75	28	37,4	19	7	2
Total	2546	756	29,7	458	201	97

Note. The number of villages for each district is that of the decision on administrative division approved by the Decree Nr. 4267 of April 4th, 1967.

The electrification of the countryside during the two first years of the fourth five-year period (1966-1967) has been characterized by a very high rythm which is without precedent in the history of the electrification of the country; this has been achieved thanks to the creation of appropriate material and technical conditions and actual availabilities, which are at the same time a guarantee for the acceleration of the rate of the electrification of the countryside in the years to come. In connection with the tempo of electrification in the future, the decision of the Fourth Plenary Meeting of the Central Committee of the Party of Labor of Albania states:

«The Central Committee of the Party is of the opinion that the concrete material and technical conditions and practical availabilities to speed up the rythm of the electrification of the countryside have already been created».

Relying on the revolutionary impetus of our working masses, on their self-denying work for the edification of socialism and the all-round development of their Homeland, on their creative initiatives to speed up the tempo of socialist construction, on their determination to surmount all obstacles and attain all the revolutionary objectives, as well as on the already existing availabilities to speed up the complete electrification of the country, the Fourth Plenary Meeting of the Central Committee of the Party of Labor of Albania, convoked on 11-12 December 1967, decided:

«To take all the necessary measures to complete the electrification of all our rural areas by November 8th 1971, the day of the celebration of the 30th anniversary of the founding of our glorious Party, so that, fourteen years ahead of the schedule laid down by the long term plan for the electrification of the countryside, there may be no village without electric light in the People's Republic of Albania».

This decision of the Plenary Meeting of the Central Committee of the Party of Labor of Albania touches our sense of national pride not only for the tempo already achieved in the progress of the electrification of our countryside, but, above all, for the fact that we are now capable ourselves of solving these problems, as a result of the all-out development of our country.

The complete electrification of the countryside poses major problems which, on their part, demand consistent efforts to be settled. Within four years' time, from 1968 to 1971, the number of the villages to be electrified will be 2 times higher than that of all the villages electrified before 1967. Accordingly, the annual tempo of the electrification of the countryside will be a very high one. It will not only be higher than that other five-year periods, but it will surpass even the one attained these last years, too. It is in this way that the number of the villages to be electrified in 1969 will be about 4.5 times higher than in 1966, whereas in 1970 and 1971 the number of the electrified villages will be about 5 times higher than in 1966. Although very high, this tempo is quite a real one, visible if one observes the progressive spread of the electrification from its beginning to this day presented in tables 7 and 8 and in the following graph.

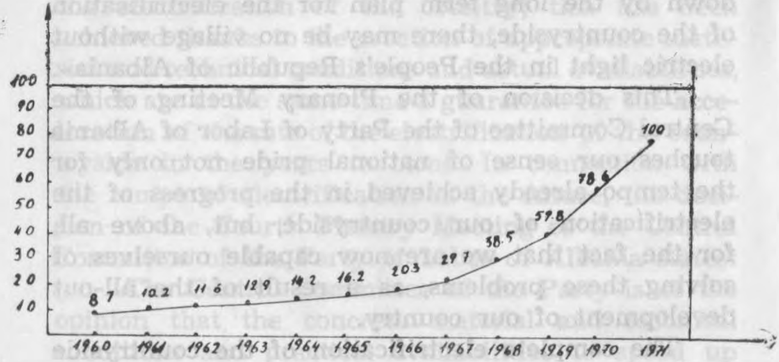


Fig. 7. Graph of the annual rise of the electrification of the countryside in percent, up to 1971 (reckoned in ratio of 1971 = 100 percent)

As it turns out from this graph, the increase percent of the number of villages electrified each year in comparison with the preceeding year will be: in 1968 — 8.6 percent, in 1969 — 19.5 percent, in 1970 — 20,7 percent, and in 1970 — 21.5 percent.

On November 8th 1971, we shall have electrified 2,546 villages, of which, i.e. about 61 percent, will be connected to the general power distribution system, 715, i.e. 29 percent, to small village hydropower stations, and 283, i.e. 10 per cent, to Diesel power stations.

Villages Electrified and Annual Electrification Prospects up to 1971

Table 7

	up to 1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Number of electrified villages	224	41	30	30	38	49	107	237	220	490	530	550

Annual Progress of Electrification in the Countryside up to 1971

Table No 8

	up to 1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Number of electrified villages	224	265	295	325	363	412	519	756	976	1466	1996	2546
Increase in percent	8,7	10,2	11,6	12,7	14,2	16,2	20,3	29,7	38,3	57,8	78,5	100

Table N° 9 and Fig. 8 give the number of the electrified villages for each year up to 1971 and the distribution of these villages according to the kind of power supply.

THE PRESENT AND FUTURE STATE OF THE ELECTRIFICATION OF OUR RURAL AREAS UP TO 1971

According to the way they are and they will be supplied with electric power

Table 9

Nr.	Period	Number of electrified villages	By the national power system	By local hydropower plants	By Diesel power plants
1.	By the end of 1960	224	98	83	43
2.	” ” 1965	412	211	129	72
3.	” ” 1966	519	290	148	81
4.	” ” 1967	756	458	201	97
5.	” ” 1968	976	572	350	154
6.	” ” 1969	1466	899	460	207
7.	” ” 1970	1996	1220	633	243
8.	” ” 1971	2546	1548	715	283

The complete electrification of our rural areas, that is of the remaining 90% of the total number of our villages, will take the projecting and setting up of 3,300 km of high-tension lines (10-6 kV), about 6000 km of low tension lines (0,4 kV), about 1300 transforming stations and more than 60 hydropower plants.

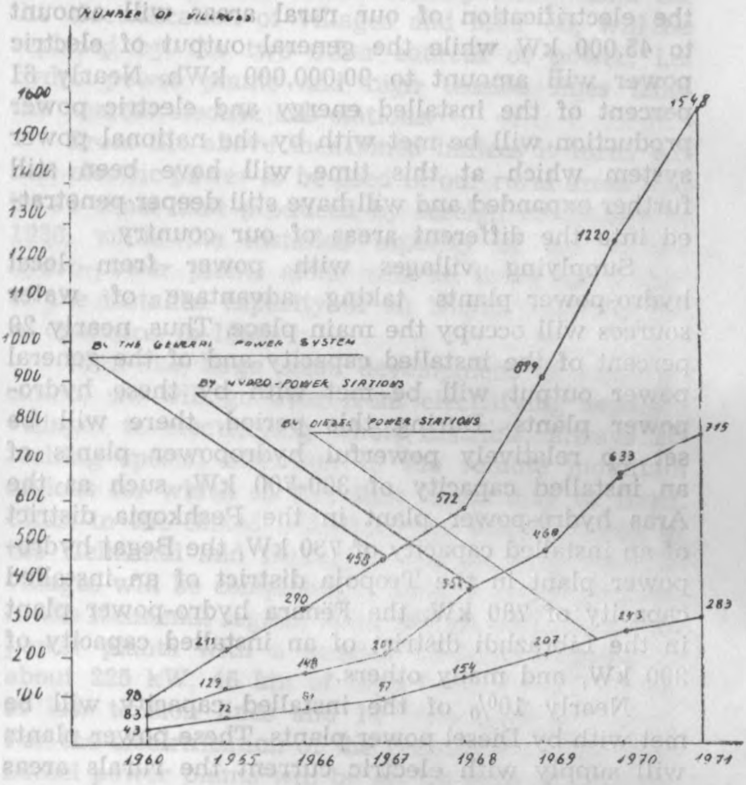


Fig. 8. Graph of the electrification of the rural areas and prospects up to 1971 (according to the source of power supply).

In 1971 the installed power needed to complete the electrification of our rural areas will amount to 45.000 kW while the general output of electric power will amount to 90,000,000 kWh. Nearly 61 percent of the installed energy and electric power production will be met with by the national power system which at this time will have been still further expanded and will have still deeper penetrated into the different areas of our country.

Supplying villages with power from local hydro-power plants taking advantage of water sources will occupy the main place. Thus, nearly 29 percent of the installed capacity and of the general power output will be met with by these hydropower plants. During this period, there will be set up relatively powerful hydropower plants of an installed capacity of 300-700 kW, such as the Aras hydro-power plant in the Peshkopia district of an installed capacity of 730 kW, the Begaj hydropower plant in the Tropoja district of an installed capacity of 780 kW, the Fënara hydro-power plant in the Librazhdi district of an installed capacity of 300 kW, and many others.

Nearly 10% of the installed capacity will be met with by Diesel power plants. These power plants will supply with electric current the rurals areas that do not lie near the national power system or in cases when hydro-power sources are not to be found in their vicinity. On the other hand, their use is imposed on us also by the high rate of electrification during this short period of only 4 years. Therefore, part of them will be temporarily used for the electrification of villages and later on, will be replaced by the two other sources of power, i.e. hydro power plants and high tension lines from the nearest electric sub-stations.

From the above mentioned indices it turns out that electric power to be used in our rural areas will be 10 times that produced by foreign companies in 1938, while the installed capacity of the village hydro-power plants alone will be three times that of the installed capacity of all Diesel power plants in operation in 1938.

With the large scale development of electrification, we will go over from electrifying separate villages to electrifying whole districts, always attaching special attention to the remote mountain regions for which shorter time limits may be fixed. Thus, in the Shkodra district, the electrification of the Kelmendi and Dukagjini regions with their 30 villages will be completed in 1968. For this purpose, in the Kelmendi region, there will be set up 4 hydro-power plants with a general installed capacity of about 225 kW, 46 km of high tension lines, 70 km of low tension lines and 16 transforming stations. For the electrification of the Dukagjini region, three Diesel power plants will be set up with an installed capacity of about 320 kW, in Nicaj-Shalë, Kir and Toplanë respectively. These are to be replaced by local hydro-power plants in a second stage. There will be set up 38 km of high tension and 80 km of low tension lines and 17 transforming stations for distributing electric power throughout this locality.

During 1968, there will be electrified many other regions such as Çermenika in the Librazhdi district, Pustec in the Korça district, Lekbibaj in the Tropoja district, etc.

The news about the decision on the electrification of our rural areas, about this both great and magnificent but at the same time difficult mass action, spread at lightning speed throughout our country; our people expressed their joy at this gift which our Party donates to them at the 30 jubilee of its founding through words that no pen could describe; our bards were quick at improvizing songs dedicated to our Party's electric light.

THE INDUSTRY OF ELECTRIC MATERIALS AND EQUIPMENTS

For the production, distribution and consumption of electric power there are needed thousands and thousands of pieces of machinery, spare parts, equipments and electric apparatuses of various kinds, such as: oil switches, distributing panels, insulators, wires, electric motors, cables of various kinds, and so on. Up to now, we have been compelled to import all these equipments from abroad being unable to turn them out at home, even the most simple of them. After the blockade set by the revisionists, just as for the other branches of our economy, our Party and Government gave directions for the setting up of an industry of electric materials. Our working people responded to the Call of the Party through concrete actions. Within a relatively short period of time, new plants were set up, such as: the State Electric Equipments Repairing Enterprise (SEREE), the Copper Wires Plant, the Durrës Electromechanic Plant, the various electric equipment repairing shops set up at machine-making plants and enterprises of building materials, and so on.

In spite of their recent technologic experience, the working people of this branch of our industry succeeded in producing new electric devices of good quality and high technical level at an advantageous cost. Our socialist economy derived great benefits from this: a great part of electric devices which used to be imported from abroad are now partialy or wholly produced at home. Moreover, we export today electric equipment bearing an Albanian trade mark. We must also emphasize that many equipments of these plants, especially those of the SEREE are designed, constructed and installed by our working people. Taking advantage of the experience of the world technique and using their talent. the engineers and workers of this enterprise have set up new machines and electric devices which our economy was badly in need of. Numerous and various assortments are produced at the SEREE, namely three phase power transformers of 60,000-30,000 V tension and 180 kW capacity; three phase asynchrone electric motors of 2 x 220/380 V and 0,6-10 kW capacity with 750-3,000 revolutions per minute; distributing devices of various tensions and capacities such as LT distributing panels, LT distributing points, LT panels, 6 kV and 10 kV HT switches, HT portable cabins, etc; HT and LT knife switches of various capacities; 6 V and 12 V lead accumulator batteries of 165 Ah capacity; various rheostates for electric apparatuses; electric switches for schools; 9-14 kV and 17-28 kV welding rods; 3,000 punching presses of 25 kW capacity; various electric ovens of a capacity of 20 kW, and so on. The process of production of the above mentioned articles goes under a highly developed technology and a satisfactory mechanization. In addition to the production of electric articles the SEREE has done also the repairing of all kinds of electric equipments. Still greater tasks have been assigned to the SEREE for the future as regards the increase in the volume of production and producing new articles. We may mention here the production of power transformers of 5600 kVa and 35000 V; of three phases asynchrone electromotors of 125 kW and 3000 revolutions per minute; of current and tension transformers, etc.

The construction of the Electric Wires Plant created a sound material basis for our power industry and for our exports. In this plant there are most modern machines turning out high quality articles. Among these items we may mention: uninsulated wires for over head cables, lacquered wires of all dimensions for coils, cotton clad wires or both lacquered and cotton clad wires of various dimensions, plastic clad electric cords with one or two threads of various dimensions, monophase or multiphase plastic clad cables, etc. Soon there will start the production of armoured cables. During the Fourth Five-year period the production and number of assortments will increase accordingly.

The other enterprises have now proceeded to the serial production of such articles as: impregnated wood poles for high and low tension lines; concrete piers of various sizes; porcelain low-tension insulators; ammeters, voltameters; electric welding instruments; wireless sets; loud-speakers; electric pans, stoves, kitchen utensils, irons, coffee-pots, lamps, etc. There will soon be produced porcelain high tension insulators, Bergmann tubes for electric installations, electric plugs, etc.

The importance of the production of electric materials and equipment does not lie only in the reduction of the volume of the imported articles, but also in the fact that the existence of such an electric industry enables our country to ensure more rapidly the material basis of power industry and to adapt it better to our own technical conditions.

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